Technical Service Data

⚠WARNING When the battery is fully charged, performance may vary due to motor and system efficiency tolerance. Technical service data represents nominal values obtained under typical operating conditions. Specifications are subject to change without notice.

MODEL			
	FR18S-2A	**FR15DR-2A**	**FR23S-2A**
DRIVE MOTOR			
Type	Series - DC	Series - DC	Series - DC
Power			
Duty factor	1 Hour Continuous	1 Hour Continuous	1 Hour Continuous
Minimum brush length	0.8 inch (20 mm)	0.8 inch (20 mm)	0.8 inch (20 mm)
Minimum commutator diameter	2.90 inches (74 mm)	2.90 inches (74 mm)	2.90 inches (74 mm)
Minimum brush spring tension	6.4 oz (180 grams)	6.4 oz (180 grams)	6.4 oz (180 grams)
TRANSMISSION/GEAR			
Type	Vertical motor spiral-bevel output	Vertical motor spiral-bevel output	Vertical motor spiral-bevel output
Gear ratio	17.57	17.57	17.57
Oil volume	1 gal (4 liters)	1 gal (4 liters)	1 gal (4 liters)
TRANSMISSION/GEAR AMBIENT TEMPERATURES			
Standard and corrosion continuous operation (see page 68) above 23°F (-5°C)	SAE 80W90		
Cold Storage (see page 68) Continuous operation 5°F (-15°C) Intermittent operation -13°F (-25°C)	SAE 80W/90		
Freezer continuous operation To -31°F (-35°C) (see page 70)	ATF		

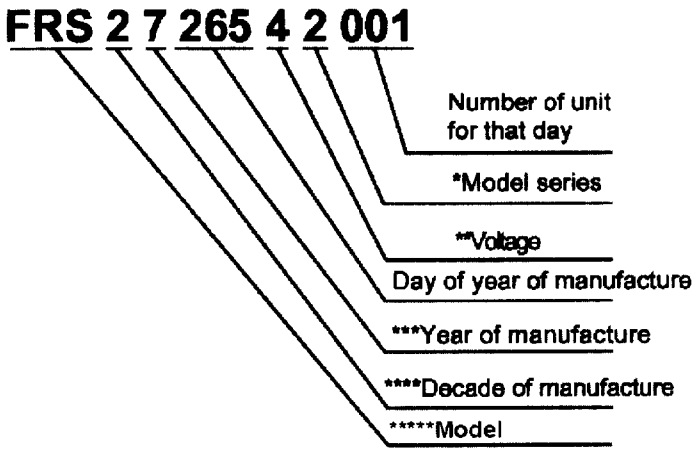
MODEL			
	FR18S-2A	**FR15DR-2A**	**FR23S-2A**
WHEELS			
Drive wheel inch (mm)	13.5 x 5.5 x 10.0 (342.9 x 139.7x 254)	13.5 x 5.5 x 10.0 (342.9 x 139.7x 254)	13.5 x 5.5 x 10.0 (342.9 x 139.7x 254)
Drive wheel weight without load with battery	**240 Mast** 3175 lb (1440 kg)	**330 Mast** 3595 lb (1630 kg)	**402 Mast** 3875 (1757 mm)
Drive wheel weight with rated load and battery	**240 Mast** 2385 lb (1081 mm)	**330 Mast** 2670 lb (1211 mm)	**402 Mast** 3184 lb(1444 mm)
Torque drive tire lug nut	95 ft-lb (129 N•m)		
Load wheel	5.0 x 3.6 inches (127 x 91 mm)	5.0 x 3.6 inches (127 x 91 mm)	5.0 x 3.6 inches (127 x 91 mm)
Load wheel weight with rated load	6975 lbs (3163807 g)		
HYDRAULIC UNIT			
Power	24 V - 36 V - 9.8 Kw 13.1 hp	36 V -	36 V -
Revolutions/minute at work pressure	2200 rpm	2550 rpm	2550 rpm
Duty factor	20% on 5 min. cycles	20% on 5 min. cycles	20% on 5 min. cycles
Minimum brush length	0.8 inch (20 mm)	0.62 inch (16 mm)	0.62 inch (16 mm)
Minimum commutator diameter	2.90 inches (74 mm)	2.80 inches (71 mm)	2.80 inches (71 mm)
Minimum brush spring tension	6.4 oz (180 g)	40 oz (1120 g)	40 oz (1120 g)
Pressure at rated load	2450 psi	2400 psi	2450 psi
Pump displacement	24 V - 13 cc 36 V - 19 cc	36 V - 27 cc	36 V - 27 cc
Tank volume	5 gal (19 liters)	5 gal (19 liters)	5 gal (19 liters)
HYDRAULIC UNIT AMBIENT TEMPERATURES			
Standard and corrosion continuous operation (see page 68) above 23°F (-5°C)	Sunoco TH		

MODEL			
	FR18S-2A	**FR15DR-2A**	**FR23S-2A**
Cold Storage (see page 68) Continuous operation 5°F (-15°C) Intermittent operation -13°F (-25°C)	ATF		
Freezer continuous operation To -31°F (-35°C) (see page 70)	Texaco 15		
FUSES			
Drive motor circuit	250A fuses, part number 305656-000		
Pump motor circuit	425A, 24V part number 305656-002 355A, 36V part number 305656-001	2 - 250A fuses F3 & F4 part number 305656-000	2 - 250A fuses (F3 & F4) part number 305656-000
Control circuit	15A (FR18S-2A) part number 122308-150 (S/N 27091000-27135000) 10A part number 25275-12 (S/N 27135001 - UP)	10A part number 25275-12	15A (FR23S-2A) part number 122308-150 (S/N 27091000-27135000) 10A part number 25275-12 (S/N 27135001 - UP)
Steering circuit	30A (S/N 27135001 - UP) part number 25275-13 30A (S/N 27091000 - 27135000) part number 122308-300		
BATTERIES			
Dimension W x L x H inches (mm)	14.4 x 38.8 x 32.0 (355 x 985 x 812) 16.4 x 38.8 x 32.0 (416 x 985 x 812)	16.4 x 38.8 x 32.0 (416 x 985 x 812) 21.0 x 38.8 x 32.0 (533 x 985 x 812)	16.4 x 38.8 x 32.0 (416 x 985 x 812) 21.0 x 38.8 x 32.0 (533 x 985 x 812)
Capacity (Max. Amp-hrs.)	24 V - 1395 36 V - 1240	36 V - 1240	36 V - 1240
Weight Minimum (Maximum)	**14.5 inch** 1600 lb (726 mm) 2300 lb (1043 mm) **16.5 inch** 2000 lb (907 mm) 2300 lb (1043 mm))	**16.5 inch** 2000 lb (907 mm) 2300 lb (1043 mm) **21.0 inch** 2600 lb (1179 mm) 2900 lb (1315 mm)	**16.5 inch** 2000 lb (907 mm) 2300 lb (1043 mm) **21.0 inch** 2400 lb (1089 mm) 2900 lb (1315 mm)
DRIVING SPEEDS			
Without load	24 V - 6.0 mph 36 V - 6.5 mph	36 V - 6.5 mph	36 V - 6.5 mph
With rated load	24 V - 5.5 mph 36 V - 6.0 mph	36 V - 6.0 mph	36 V - 6.0 mph

MODEL			
	FR18S-2A	FR15DR-2A	FR23S-2A
LIFTING/LOWERING TIME			
Lift without load	24 V - 60 fpm 36 V - 80 fpm	36 V - 94 fpm	36 V - 94 fpm
Lift with rated load	24 V - 40 fpm 36 V - 60 fpm	36 V - 60 fpm	36 V - 60 fpm
Lower without load, electrical valve	75 fpm	90 fpm	90 fpm
Lower with rated load, electrical valve	80 fpm	95 fpm	95 fpm
CURRENT READINGS			
Driving without load	24 V - 140 amp 36 V - 140 amp	36 V - 150 amp	36 V - 150 amp
Driving with rated load	24 V - 160 amp 36 V - 165 amp	36 V - 170 amp	36 V - 170 amp
Lifting without load	24 V - 36 V - 240 amp	36 V - 320 amp	36 V - 320 amp
Lifting with rated load	24 V - 36 V - 415 amp	36 V - 570 amp	36 V - 570 amp

Ordering Spare Parts

1. Locate fault on truck.
2. Identify truck model, serial number, and battery voltage.
3. Locate page with the exploded diagram and find the item number for the part required.
4. Locate item number in table. Select the column for actual truck model and serial number. The following is an explanation of a serial number,



* 2 = FR18S-2A, FR23S-2A; 3 = FR15DR-2A
** 4 = 24 volt; 6 = 35 volts
*** 7 = 1997, 8 = 1998, etc.
**** 1 = 198_, 2 = 199_, 3 = 200_
***** FRS = FR18S-2A & FR23S-2A;
FRD = FR15DR-2A

⚠ CAUTION Although some trucks appear to be similar, component parts may not be interchangeable. If an incorrect part is used, the truck may malfunction.

5. Note part number.
6. Call your local **Komatsu Forklift Dealer** and state the part number.
7. If truck model, serial number, or article number cannot be found, call your local **Komatsu Forklift Dealer** for assistance.

Contents, Section P

1. Planned Maintenance

P1.0 INTRODUCTION, MAINTENANCE

P2.0 SERVICE SCHEDULE

P3.0 LUBRICATION CHART

P4.0 OIL AND GREASE SPECIFICATIONS

Introduction, Maintenance

The schedules of maintenance and lubrication given in this section of the Service Manual cover up to one year's operation of a truck. These schedules are based on hourly usage and can be adapted to suit most normal one shift patterns. The following hourly usage figures have been used when calculating the schedule:

Single shift, 30 hours per week usage

Double shift, 60 hours per week usage

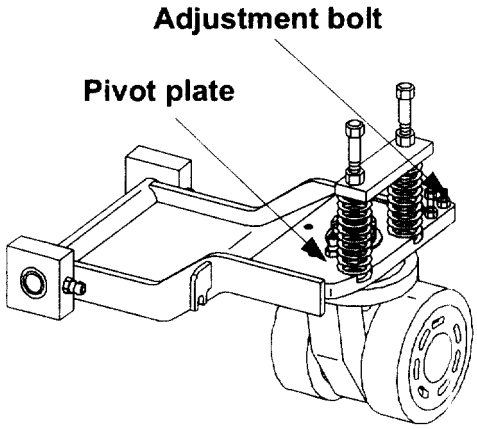
Triple shift, 90 hours per week usage

The schedules are intended only as a guide, not as a rigid structure. Operators of trucks may wish to adapt them to local requirements; but it is emphasized that the schedules represent minimum manufacturer requirements, and all items should be included in a service program to ensure minimum downtime and a high safety status of the equipment.

- Use only spare parts approved by **Komatsu Forklift.**
- Always clean the equipment and carry out a full safety check after service.

1. Jacking Truck Off The Floor

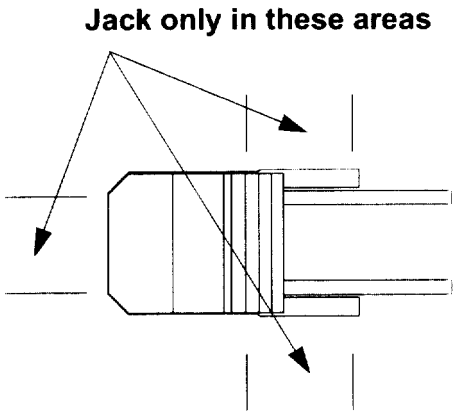
To perform maintenance that requires the truck to be lifted from the floor, observe the proper safety precautions as follows:



1. Lower the forks completely. Remove any load.
2. Turn key switch OFF and disconnect battery connector from the truck.
3. If possible, stabilize the top of the mast with an overhead chain hoist.
4. Before jacking the truck, check the stop block and adjustment bolt on the pivot plate to make sure they are in good condition. If the block or adjustment bolt are excessively worn or missing, take the truck out of service and contact your local Komatsu Forklift Product Support Representative.

⚠WARNING Use extreme care whenever the truck is jacked up for any reason. Never block the truck between the mast column and floor. Use a suitable hoist to stabilize the mast. Keep hands and feet clear from beneath truck while jacking. Use jack stands or solid blocks to support the truck, do not rely on jacks.

5. Place the jack under the designated jacking points.



1.1. Elevate Rear of Truck

1. Place the jack in the designated jacking position.
2. Jack the rear of the truck so the drive tire is off the floor no more than 3 inches (76 mm).
3. Block truck in place.

1.2. Elevate Either Side of Truck

1. Place the jack in the designated jacking position.
2. Jack the side of the truck so that the load wheel is off the floor no more than 0.50 inch (12.7 mm).
3. Block truck in place.

2. Lubricants

2.1. Standard

For reach trucks in their standard design under continuous operation, the recommended ambient temperature is 23° F (-5° C). These trucks should apply to the following guidelines:

- Parked outside storage when not in use
- Charging and maintenance work to be done outside storage

2.2. Corrosion

In an environment where a damp, wet, or corrosive condition exits, these trucks apply to the following guidelines:

- All hardware coated with LPS Rust Inhibitor during and/or after assembly
- Sealed components (switches, push/pull cables, sensors, etc.) where appropriate
- Grease fittings provided on axle and other pivot points
- Plated pins, shafts and linkage where required
- All electrical connections coated with Dow Corning No. 4 compound during assembly
- Lift chains coated with Libriplate chain protectant
- Components coated with LPS Cold Galvanize where appropriate
- Components (adjustable features, bearing races, etc.) coated with Antisieze where appropriate

2.3. Cold Storage

To prevent moisture contamination in the electrical system, trucks equipped with cold storage conditioning packages have electrical compound applied to all electrical connections during assembly. For cold storage reach trucks with continuous operation, the recommended ambient temperature is 5° F (-15° C). Cold storage trucks should apply to the following guidelines:

- Trucks completely dry prior to commencing the continuous stay in the cold storage
- Parked inside the cold storage for operator breaks
- Charging and maintenance work done outside the cold storage
- Trucks completely dry before returning to continuous cold storage operation

For cold storage reach trucks with intermittent operation, the recommended ambient temperature is - 13° F (-25° C). Trucks apply to the following guidelines:

- Surface condensation occurs, “wet” trucks should neither remain idle in the cold storage for no longer than 10 minutes nor operate inside the cold storage for extended periods
- Condensation must not be allowed to freeze on the truck at any time
- Park outside the cold storage for operator breaks
- Charging and maintenance work to be done outside the cold storage

Items included in the cold storage package are as follows:

- All corrosion conditioning items
- Sealed components used in all non-heated locations
- Heavy-duty mechanical switches used where appropriate
- Thermostat controlled heaters used to prevent moisture buildup in electrical component areas
- Heaters located around the electronic card, the drive and lift power controllers, the steering tachometer, and hydraulic control potentiometers
- Windshield replaced with a screen
- Hydraulic fluid in lift/auxiliary system changed to ATF
- Anti-seize compound used on the control console, vertical adjustment bar
- Standard grease replaced with Mobiltemp SHC 32 lubricating grease

2.4. Freezer Storage

To prevent moisture contamination in the electrical system, trucks equipped with freezer storage conditioning packages have electrical compound applied to all electrical connections during assembly. For freezer storage reach trucks with continuous operation, the recommended ambient temperature is -31° F (-35° C). Trucks should apply to the following guidelines:

- Trucks must be parked inside the freezer for operator breaks
- Trucks stay in the freezer during battery charging or change-out (If truck is removed from freezer for maintenance work or battery charging, it must be completely dry before reentering the continuous shift in the freezer)

Items included in the freezer storage package are as follows:

- All cold storage items contained
- Transmission fluid in the lift/auxiliary system will be changed to Texaco 15
- Cooling fan in the component compartment will be disconnected.

Service Schedule

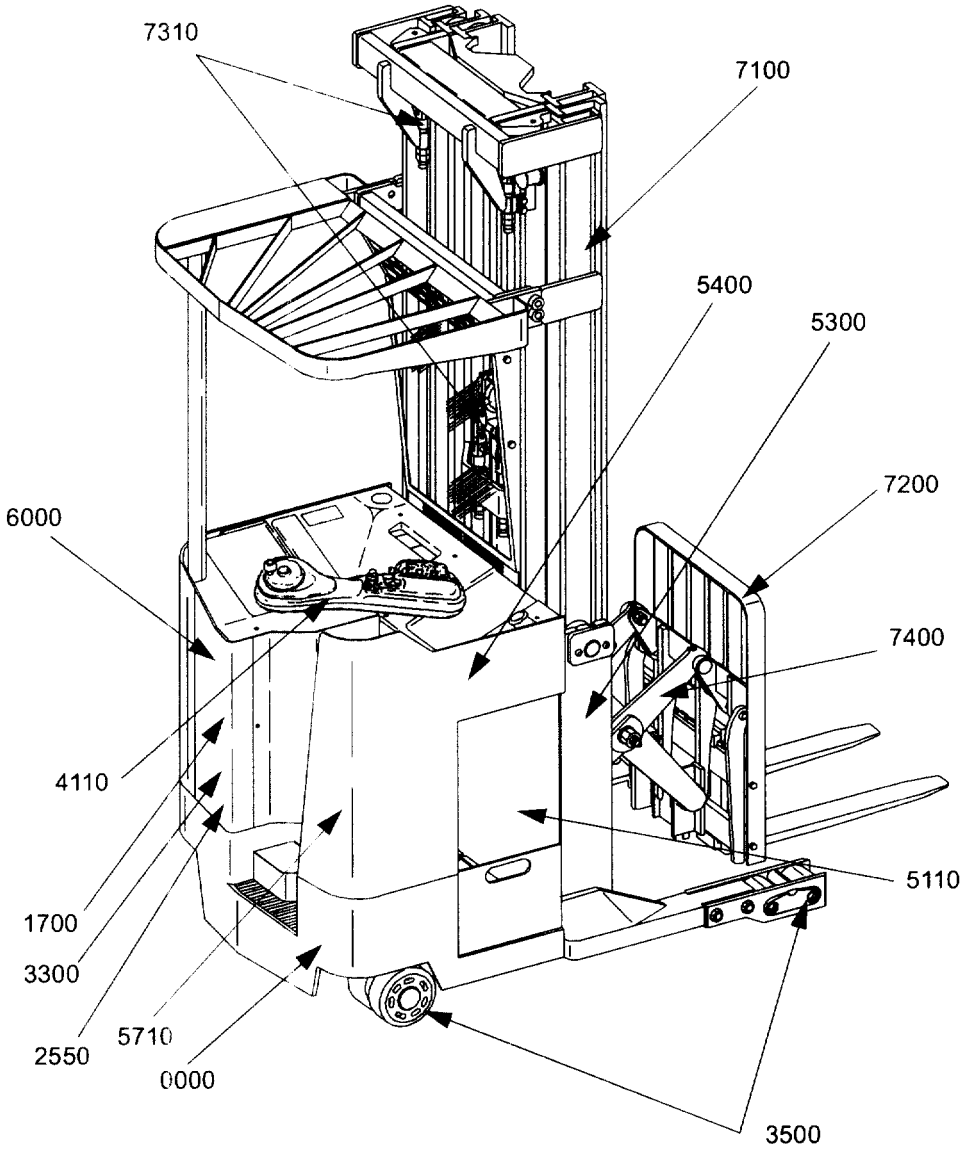
1. Planned Maintenance Schedule

Item	Work Required								
	Interval in Hours	8	30	120	240	360	720	1440	4320
	Interval in Days/Weeks/Months	1 d	1w	1 m	2 m	3 m	6 m	12 m	36 m
0000	Chassis								
0000.1	Check truck identification plate for legibility						X		
0000.2	Check for damage and cracks						X		
0000.3	Retighten truck body bolts (to chassis)						X		
0000.4	Check cover screws						X		
0640	Operator Controls								
0640.1	Check travel direction/speed selectors for operation	X							
0640.2	Check horn button for operation	X							
0640.3	Check hydraulic levers for operation	X							
1700	Motors								
1700.1	Check for arcing due to poor connections			X			X		
1700.2	Check tightness on all connections			X			X		
1700.3	Clean motor of dirt and dust			X			X		
1700.4	Check torque of motor bolts			X			X		
1700.5	Check for abnormal noise in motor bearings			X			X		
1700.6	Blow carbon, copper, and plastic particle accumulations from the motor using compressed air			X			X		
1700.7	Check electrical armature (see page 138)								
1700.8	Check brushes (see page 135)						X		
2550	Drive Gear								
2550.1	Check for oil leakage			X			X		
3300	Brake								
3300.1	Clean dust and debris			X			X		
3300.2	Check brake shoes for wear							X	

Item	Work Required								
	Interval in Hours	8	30	120	240	360	720	1440	4320
	Interval in Days/Weeks/Months	1 d	1w	1 m	2 m	3 m	6 m	12 m	36 m
3300.3	Check correct clearance of electrical brake and brake shoes						X		
3300.4	Check brake operation	X							
3500	Wheels								
3500.1	Remove all string, wrapping and debris	X							
3500.2	Check all wheels for wear	X							
3500.3	Grease load wheel bearings				X				
3500.4	Grease caster and caster wheels				X				
4100	Steering Wheel								
4100.1	Check fasteners						X		
4100.2	Check ease of steering						X		
5110	Battery								
5110.1	Electrolyte level, 0.50-0.625 inch (12-15 mm) above cell plates		X						
5110.2	Check all connections: battery, battery and charger plugs		X						
5110.3	Check all cell and link covers intact		X						
5110.4	Check battery specific gravity			X					
5200	Instrument Panel								
5200.1	Check battery indicator and hour meter for correct operation						X		
5300	Electrical Control System								
5300.1	Check key switch	X							
5300.2	Check brake micro switch						X		
5300.3	Check control wiring harness for proper routing						X		
5300.4	Examine negative cable and wires from the battery to the main electronic card (A5)					X			
5300.5	Check red emergency stop switch for operation	X							
5400	Electrical Panel								
5400.1	Cleaning and mounting to chassis						X		
5400.2	Check tightness on all connections						X		

Item	Work Required								
	Interval in Hours	**8**	**30**	**120**	**240**	**360**	**720**	**1440**	**4320**
	Interval in Days/Weeks/Months	**1 d**	**1w**	**1 m**	**2 m**	**3 m**	**6 m**	**12 m**	**36 m**
5400.3	Check contactor tips						X		
5400.4	Check contactor tips for free movements						X		
5400.5	Check all cable insulation for damage						X		
5400.6	Check power safety control system on the transistor regulator (see page 363).					X		X	
5710	Electronic Card								
5710.1	Check for connections in harness connectors						X		
6000	Hydraulic System								
6000.1	Check hoses and connections for leakage						X		
6000.2	Check hoses for wear and damage						X		
6000.3	Check oil tank for cracks, leaks and mounting						X		
6000.4	Check correct oil level						X		
6000.5	Change hydraulic oil							X	
6000.6	Change hydraulic filter element							X	
7100	Mast								
7100.1	Check for damage and cracks						X		
7100.2	Retighten mast mounting bolts						X		
7100.3	Check clearance of rollers						X		
7100.4	Check lateral play of inner section						X		
7100.5	Check for wear on lift chains and chain rollers						X		
7100.6	Check adjustment of lift chains						X		
7100.7	Clean & lube lift chains			X			X		
7100.8	Clean & lube mast columns			X			X		
7100.9	Lube chain sheaves			X			X		
7210	Side Shifter								
7210.1	Check torque of lower hook mounting bolts			X					
7210.2	Inspect hydraulic hoses			X					
7210.3	Inspect cylinder and fittings			X					

Item	Work Required								
	Interval in Hours	**8**	**30**	**120**	**240**	**360**	**720**	**1440**	**4320**
	Interval in Days/Weeks/Months	**1 d**	**1w**	**1 m**	**2 m**	**3 m**	**6 m**	**12 m**	**36 m**
7210.4	Grease lower hook where pads slide			X			X		
7210.5	Check thickness of upper pads							X	
7210.6	Check thickness of lower pads							X	
7210.7	Replace upper and lower pads								X
7310	Lift Cylinder								
7310.1	Check for leakage					X			
7310.2	Check mounting					X			
7400.	Lifting Device								
7400.1	Check clearance of fork carriage						X		
7400.2	Check fork carriage for damage and cracks						X		
7400.3	Check forks for wear and cracks						X		
7400.4	Check reach attachment for damage and cracks					X			
7400.5	Check reach attachment for proper reach stroke and timing.					X			
7400.6	Check reach attachment for damaged retract bumpers					X			
7400.7	Lube all grease fittings on reach attachment			X		X			


7310
7100
5400
5300
7200
6000
7400
4110
5110
1700
3300
2550
5710
0000
3500

2. Planned Maintenance Procedures

This section describes how to perform the services listed in the Schedule of Planned Maintenance Operations. As with the “Schedule”, this section is subdivided into service intervals.

2.1. Services Performed Daily or Every 8 Operating Hours

The daily inspection is to be made by the operator prior to each operating shift. It is the operator’s responsibility to report any defects to the proper authorities. The truck should not be operated until it has been inspected and repaired by a trained, qualified, and authorized technician. The operator is ultimately responsible for the safe operation of reach truck.

2.1.1. Battery Discharge Indicator with slow down

The battery discharge indicator indicates the current charge status of truck’s battery. (See “Battery Discharge Indicator Parameter Adjustment” on page 384.)

1	Full charge battery
1/2	Half charged battery
0	Discharged battery

The battery discharge indicator has an integrated cut-out function that slows down truck’s lift function when a predetermined charge level has been reached. This prevents overloading the battery and increases the operating economy of truck. When the battery has reached a charge level equivalent to 70% discharge, a warning signal is given via flashing lights. A further 10% of the battery’s capacity can then be used before the battery discharge indicator slows down the lift function.

2.1.2. Hydraulic System

Inspect entire truck for leaks, especially around hydraulic pump assembly and lift cylinders. Any sign of oil on the floor under truck is an indication that truck may be leaking hydraulic oil or transmission fluid. Report any problems to the proper authorities, and **DO NOT** operate truck until it has been inspected and repaired by a trained, qualified, and authorized technician.

2.1.3. Frame/Sheet Metal
Inspect truck for loose, damaged or missing parts. All shields must be in place and functional. Report any problems to the proper authorities. **DO NOT** operate truck until it has been inspected and repaired by a trained, qualified, and authorized technician.

2.1.4. Wheels/Tires
Inspect wheels and tires for wear and damage. Trash that is wrapped around wheels and axles will cause premature tire wear and bearing damage. The floors should be kept clear of trash to prevent damage to wheels and tires.

2.1.5. Functions/Operations
Test truck for the proper operation of all functions including the travel controls, lift and lower functions, brakes, and emergency disconnect button. Safety devices must be operational. Report any problems to the proper supervisors. DO NOT operate truck until it has been inspected and repaired by a trained, qualified, and authorized technician.

2.2. Services Performed Monthly or Every 120 Operating Hours

The monthly planned maintenance service should be performed by a trained, qualified, and authorized technician.

2.2.1. Inspection
All services and inspections listed above for the daily inspection should be performed at this time. The inspection procedure should be more thorough, and minor deficiencies should be corrected.

2.2.2. Transmission
Inspect for oil leakage.

2.2.3. Brakes
When the foot is lifted from the brake pedal it should stop a fully loaded truck at full speed in approximately one truck length.

2.2.4. Battery

Contact your battery dealer for specific instructions on care and maintenance of the battery. An average battery will have a specific gravity of 1.170 at the 80% discharged level. However, there are many different batteries on the market. Only the battery manufacturer can accurately determine the fully charged and 80% charged levels. Contact the battery manufacturer for this information.

2.2.5. Electrical Connections

Check that all electrical connections are clean and tight. Plug-in connectors should be unplugged and plugged back in to clean terminals. If the truck is equipped with any of the cold-storage, freezer use, or corrosive environment application packages, the di-electric compound in the plug-in connectors should be renewed.

2.2.6. Contactor Tips (NOT Sealed)

Inspect contactor tips for arcing, pitting, or burning. Minor pitting of the tips is not a problem. However, if tips are pitted through the tip to the copper bar, tips should be replaced. **DO NOT** file tips. Replace tips only in complete sets. Some contactors have concealed tips or fully sealed so tips cannot be replaced.

2.2.7. Motor Brushes

The drive motor and pump motor are equipped with a brush wear sensor which will indicate when brushes need replacing. For minimum brush length see page 57. As a rule of thumb, brushes should be replaced if brush spring is within 0.0625 inch (1.59 mm) of touching brush holder.

2.2.8. Drive Motor

Blow out drive motor fan and vents. Check for any signs of oil on drive motor fan and air vents. Check for any damage to fan or air vents.

⚠WARNING Compressed air used for cleaning **MUST** be reduced to less than 30 psi (206 kPa) and then only with effective chip-guarding and personal protective equipment worn.

2.2.9. Hydraulic Reservoir

Check fluid level in the hydraulic reservoir.

2.2.10. Frame Lube

The pressure type grease fittings (zerk fittings) should be lubricated with grease (see page 84). The total number of grease fittings depends on truck options when built (see page 83). A truck with a cold-storage, freezer use, or corrosive environment application package will have more grease fittings than a standard truck. Look for flush-type grease fittings on the load wheel axles. Regular fittings may be found on the transmission mounting bearing and mast chain sheave shafts.

2.2.11. Pivot Points

There are pivot points and other items that need to be lubricated but do not have grease fittings. Lubricate these non-greasable wear points with a drip oil can using 10 weight machine oil.

2.3. Services Performed Every 480 or 960 Operating Hours

The planned maintenance service should be performed by a trained, qualified, and authorized technician.

2.3.1. Drive Motor

Since the operating environment of material handling equipment varies widely, the following recommendations are suggested for periodic maintenance inspections for the drive motor armature.

- **Normal Service** 8 hours per day operation
- Routine inspection every 960 hours (8 months).
- **Severe Service** 24 hours of daily operation
    1. Dusty or sandy locations; such as a cement plant, lumber or flour mills, coal dust or stone-crushing areas.
    2. High temperature areas; such as steel mills, foundries, etc.
    3. Sudden temperature changes (continuous in-door-outdoor movement) that is refrigeration plant, etc.
- Routine inspection every 480 hours (4 months).

2.4. Services Performed Annually or Every 1440 Operating Hours

The annual planned maintenance service will take a longer period of time to complete than does the monthly service. This would be a good time to arrange other repairs that have been noted on the monthly service.

2.4.1. Inspection

All services and inspections listed for the daily and monthly inspection should be performed at this time. The inspection procedure should be more thorough, and minor deficiencies should be corrected.

2.4.2. Transmission

The transmission fluid should be drained once a year. The drain port is located on the lower portion of the side cover opposite the drive tire. Remove bolt to drain transmission fluid. Flush transmission case. Pour a clean solution into the fill port accessed from the battery compartment. With the drive tire off the floor, allow solution to run out of drain port while transmission is running. Stop flushing when the solution runs clean. Allow the solution to drain well before replacing drain plug bolt. Replace drain plug bolt. Refill transmission with proper clean oil before operating truck.

2.4.3. Battery

At approximately 1500 hours, contact an authorized battery dealer to determine the overall condition of the battery. Determine if the battery needs to be washed down. This can only be done by properly trained, qualified, and authorized technician.

2.4.4. Hydraulic System

The hydraulic system should be drained, flushed and refilled, and the pressure relief valve setting should be checked and adjusted. This will maintain proper lubrication properties within the system.

⚠WARNING Before siphoning oil from reservoir, make certain siphon is clean.

To drain reservoir, remove reservoir filter assembly. Siphon oil from reservoir and purge oil out of hydraulic system. Fill reservoir with proper clean oil. Operate the raise and lower function several times to purge air from the system. Check oil level. Put rated truck capacity load on forks and adjust pressure relief valve, if necessary, so that truck will lift rated load.

2.4.5. Brakes

Follow procedures for brake removal before inspecting. Remove brake assembly and inspect friction disc for wear. The friction disc should be replaced once thickness is 0.25 inch (6 mm) or less. The armature and magnetic coil should be adjusted if machine will not meet stopping and holding specifications. The air gap should not exceed 0.018 inch (0.46 mm) and should remain within 0.003 inch (0.076 mm) throughout the circumference.

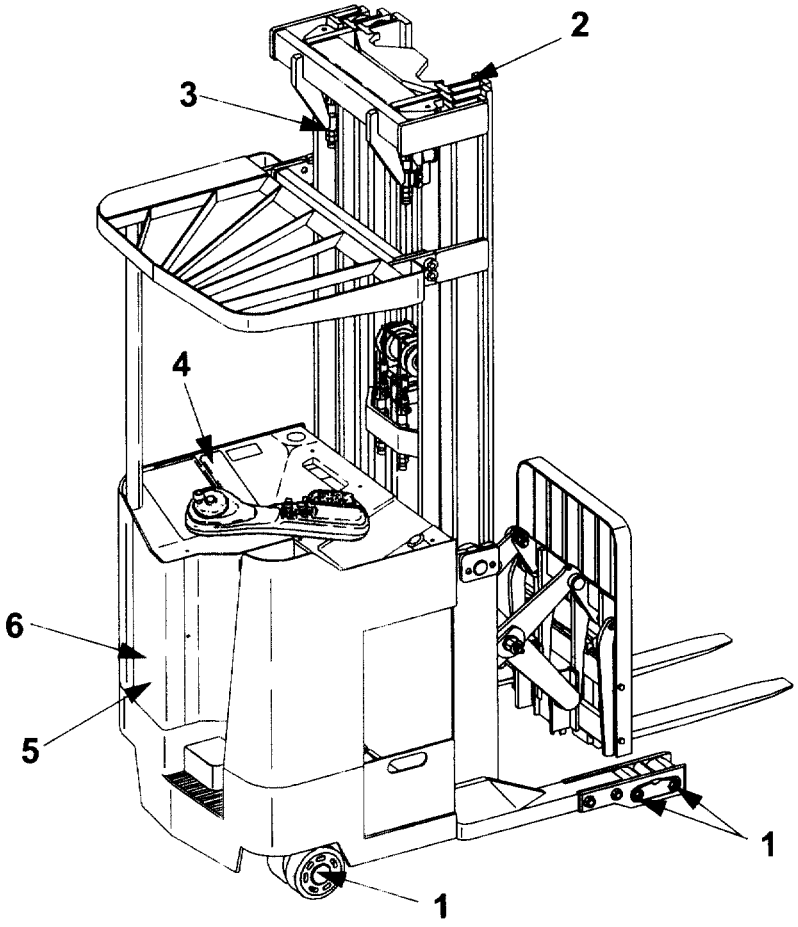
2.4.6. Lift and Carriage Chains

Lift and carriage chains should be checked every 720 hours. A chain gauge should be used to check stretch of the links. To adjust inner columns, loosen jam nut and tighten chains equally until the top of the columns are level in the fully lowered position. Retighten jam nut and torque. Carriage chains should be adjusted in the fully lowered position. Adjust chains until the top of forks are 2.0 inches (50.8 mm) off of the floor.

Lubrication Chart

Pos. No.	Service Point	Interval/Running Hours			Lubricant
		360 h	720 h	1440 h	(See "Approved Oils and Grease" on page 84)
1	Wheel bearings	L			A
2	Mast beam		L		E
3	Lifting chains		L		D
4	Hydraulic system		C	O	B
5	Steering bearings			L	C
6	Drive gear		C	O	C

L = Lubrication C = Check O = Oil change



Truck Lubrication Points

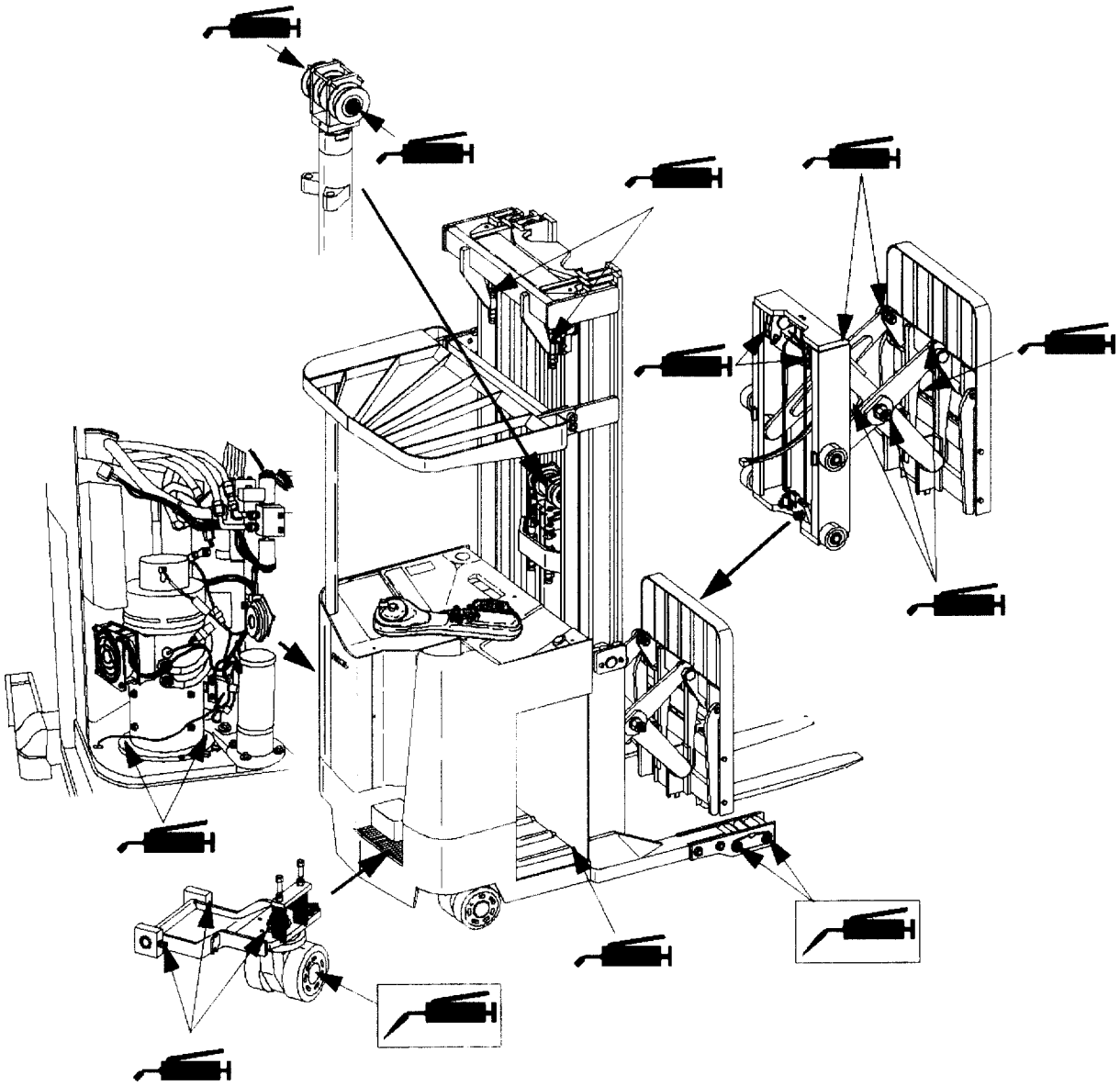
Oil and Grease Specifications

1. Approved Oils and Grease

Specification					
Lubricant		Standard and Corrosion	Cold Storage	Freezer	Application area
		Continuous Operation Above 23° F (-5° C)	Continuous Operation To 5° F (-15° C) Intermittent Operation To -13° F (-25° C)	Continuous Operation To -31° F (-35° C)	
A	Grease	Mystik JT-6	Mystik JT-6	Mobiltemp SHC 32	Bearings and bushings
B	Hydraulic oil	Sunoco TH	ATF	Texaco 15	Hydraulic system
C	Transmission oil	SAE 80	SAE 80	ATF	Gears
D	Motor Oil	# 10 W 40	# 10 W 40	# 10 W 40	Chains
E	Grease	Molykote 200025 *	Molykote 200025	Molykote 200025	Mast columns, Reach, Sideshift
E	Grease	49670-00 *	49670-00	49670-00	Mast columns, Reach, Sideshift

* Refer to section 10000 of Parts Book for special lubricants.

2. Grease Location Points



3. Mast Adjustment Points